PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Dispensa et al.	)	Examiner: Richard G Keehn
	)	
Serial No. 10/621,669	)	Art Unit: 2456
	)	
Filed: July 17, 2003	)	Confirmation No. 2080
	)	
For: METHOD AND SYSTEM FOR SPLITTING AND SHARING ROUTING INFORMATION AMONG SEVERAL ROUTERS ACTING AS A SINGLE ROUTER	)	

Docket No. FR920020044US1 (IEN-10-6561)

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Attached herewith is an Appeal Brief pursuant to 35 U.S.C. §134 and 37 C.F.R. §41.37 for the above-identified patent application in support of a Notice of Appeal filed with the United States Patent and Trademark Office on January 13, 2009. The Examiner is also thanked for the interview granted for January 13, 2009.

I. REAL PARTY IN INTEREST

The real party in interest in the above-entitled application is International Business Machines Corporation of Armonk, New York.

II. RELATED APPEALS AND INTERFERENCES

The undersigned attorney is not aware of, and on information and belief, neither the appellants nor the assignee is aware of, any related appeals or interferences which would directly affect, or be directly affected by, or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-3, 5-7 and 9 are pending and are being appealed. Claims 4, 8 and 10-11 were cancelled by amendment of June 23, 2008. All of the pending claims have been finally rejected.

IV. STATUS OF AMENDMENTS

There are no un-entered amendments filed prior or subsequent to the final rejection.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent **claim 1** relates to a method for splitting and sharing routing information among several routers within a group of routers. The method comprises providing a group of routers **304** (see paragraph [0037]), with each of these routers acting as a single border router in an Internet protocol network (see paragraph [0043]). Each router also comprises a routing table (see paragraph [0043]). The method also comprises comparing the size of the routing tables with a predefined threshold (paragraphs [0046] and [0051]) and in response to the size of a routing table of a first of a group of routers **304** (R1) exceeding the predefined threshold (paragraphs [0046] and [0051]): splitting the first router's **304** (R1) routing table into a plurality of subnetworks (paragraphs [0047] and [0051]), a second router **304** (R2) taking responsibility for routing IP traffic intended for a one of the plurality of subnetworks by informing each of the other routers **304** (R1, R3, R4) that it is ready to receive the IP traffic from the each of the other routers **304** (R1, R3, R4) directed to the one subnetwork (paragraph [0047]), and in response to the informing, each of the other routers **304** (R1, R3, R4) selecting and removing from their own routing table a route related to the one subnetwork and replacing the removed route by a single route pointing to the informing second router (paragraphs [0047] and [0052]).

Claim 5 depends from claim 1 and further comprises the step of selecting routes in the routing table comprising the further step of selecting contiguous IP addresses within a given address range (see paragraphs [0051] and [0057]-[0060].

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether independent claim 1 and dependent claims 2-3, 6-7 and 9 under 35 USC §103(a) are unpatentable over Martin, US Pat. No. 6,744,739 B2, and further in view of Huitema et al., US Pat. No. 7,065,587 B2 and Miller, US Pat. No. 6,915,457 B2.

Whether dependent claim 5 under 35 USC §103(a) is unpatentable over Martin, US Pat. No. 6,744,739 B2, further in view of Huitema et al., US Pat. No. 7,065,587 B2, further in view of Miller, US Pat. No. 6,915,457 B2, and further in view of Choe, US App. No. US 2002/0118682 A1.

VIII. ARGUMENTS

A. The rejection of independent claim 1 and dependent claims 2-3, 6-7 and 9 under 35 USC §103(a) as being unpatentable over Martin, Huitema et al, and Miller should be reversed.

Claims 1-3, 6-7 and 9 are rejected as being unpatentable under 35 U.S.C. §103(a) over Martin in view of Huitema et al. and further in view of Miller. This rejection should be withdrawn because the combination of Martin, Huitema et al. and Miller does not teach or suggest all the limitations of the subject claims and, therefore, fails to establish a *prima facie* case of obviousness with respect to the subject claims. The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___ (2007). Either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. MPEP §706.02(j), citing *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Thus, where a combination of references fails to teach the entire invention, a *prima facie* case of obviousness is not established because all of the claim limitations are not taught or suggested by the combination of references.

Independent claim 1 claims subject matter not obvious over the combination of Martin, Huitema et al. and Miller, and is thus believed allowable over the combination of references under 35 USC §103(a). Specifically, independent claim 1 recites a method for splitting and sharing routing information between a group of routers, comprising:

(i) providing a group of routers;

(ii) each of the routers acting as a single border router in an Internet protocol network, each router comprising a routing table;

(iii) comparing the size of the routing tables with a predefined threshold; and

(iv) in response to the size of a routing table of a first of the group of routers exceeding the predefined threshold:

(a) splitting the first router's routing table into a plurality of subnetworks;

(b) a second of the routers taking responsibility for routing IP traffic intended for a one of the plurality of subnetworks by informing each of the other routers that it is ready to receive the IP traffic from the each of the other routers directed to the one subnetwork; and

(c) in response to the informing, each of the other routers selecting and removing from their own routing table a route related to the one subnetwork and replacing the removed route by a single route pointing to the informing second router.

In the Final Office Action dated October 16, 2008, the Office asserts that Martin at Figures 1 and 5 and column 2, lines 21-24, Huitema et al. at column 3, lines 10-13 and Miller at column 8, lines 5-20 teach all the aspects of claim 1. The combination of Martin, Huitema et al. and Miller does not teach the invention as claimed, nor is the invention obvious to one skilled in the art with knowledge of Martin, Huitema et al. and Miller.

In particular, the Office asserts that Martin discloses providing a group of routers, each of the routers acting as a single border router. The Office further asserts that Martin teaches splitting a router's routing table into a plurality of subnetworks and informing other routers that it is ready to receive the IP traffic from the other routers directed to a subnetwork. Martin instead discloses a method for determining network routing topologies by obtaining Border Gateway Protocol (BGP) information utilizing an Exterior Gateway Protocol (EGP) peer (see

column 3, lines 43-53). By using a software-based routing engine to host the "network discovery" software and a peer relationship with an EGP speaking router in the network, an EGP database can be loaded from the EGP router and imported into the network discovery software for determining the correct topology (see column 3, lines 50-53). An exemplary system utilizing the method in Martin includes a network incorporating two autonomous systems connected by two autonomous system boundary routers or ASBRs, with the two autonomous systems also including area border routers or ABRs (see column 5, lines 6-17).

These ABRs receive and distribute intra-area routes and routes to the ASBRs (see column 5, lines 23-25). Every router in a particular area will store at least that same routing database information (see column 6, lines 21-25). For example, the same types of intra-area routes are contained within the management information base of every router in a particular area of an autonomous system (see column 6, lines 28-30).

Martin further discloses that networks announced by routers outside the area may be summarized, so that instead of announcing each of a thousand networks, an area border router can be configured to announce those networks coming in as through they were a single, much larger network (see column 7, lines 46-54), which is part of the concept of route summarization, where a network is divided into logical areas with each area's border router advertising only a single summary route to other areas to reduce routing table size (see column 2, lines 21-24).

Martin is silent regarding providing a group of routers, with each of the routers acting as a single border router. Each of the routers described in Martin acts on its own as an area border router or system border router, containing all routing information for its particular area (see column 7, lines 46-54). *No group of routers is disclosed wherein the entire group together acts as one router.*

Martin is also silent regarding splitting a routing table into a plurality of subnetworks and informing other routers that it is ready to receive the IP traffic from the each of the other routers directed to a subnetwork. Martin instead discloses receiving summarized routes from outside networks that are then broadcast by the area border routers to other routers contained in the autonomous systems (see column 7, lines 46-54). *The area border routers do not summarize routes within the autonomous systems and individual area border routers do not receive routing information from individual subnetworks that have been split from another router's routing*

table. Thus, Martin fails to teach or suggest each and every element of the claimed subject matter.

In the Final Office Action, the Office concedes that Martin fails to disclose comparing the size of the routing tables of each of the routers to a predefined threshold and in response to the size of the routing table exceeding the predefined threshold (sic), but asserts that Huitema et al. makes up for this deficiency. Huitema et al., though, discloses a Freenet routing table that associates document identifiers and the identification of neighbors from whom a document is received (see column 3, lines 4-6). The routing table is routinely updated during a retrieval process, where when a request is successful, each node in the path enters into the table an entry linking the document identifier and the neighbor node from which the document was received (see column 3, lines 6-10).

Huitema et al. further discloses that there are practical (physical) limits to the routing table. When the maximum limit is reached, nodes have to select the entries they intend to keep or drop (i.e., a new input will replace the least recently used input) (see column 3, lines 10-15). Huitema et al. describes only a practical available space limit for a routing table, with only so much information being able to be contained within the table. Huitema et al. is silent regarding comparing the size of the routing table to a predetermined threshold whereby an action (in particular, splitting the routing table into a plurality of subnetworks and a second of the routers taking responsibility for routing IP traffic from one subnetwork by informing each of the other routers that it is ready to receive the IP traffic from the each of the other routers directed to the one subnetwork) is taken if the threshold is exceeded. *Only when the available space within the table is used up in Huitema et al. will unused input be replaced.* Hence, Huitema et al. fails to teach or suggest the claimed elements of claim 1.

Lastly, in the Final Office Action, the Office concedes that Martin fails to teach a second router taking responsibility of routing traffic but asserts that Miller makes up for the conceded deficiency. Miller at Figure 5 discloses a system where application errors can be pinpointed by filtering messages to produce a designated set of message (see also Abstract). In Figure 5, a router A has a routing manager and a routing plane index (see column 7, lines 56-59). The example further includes two additional routers, B and C, which communicate with A by RIP (router B) and BGP (router C) (see column 7, line 64 to column 8, line 4).

If pathways exiting from router B fail, for instance a second RIP pathway and a BGP pathway, router B updates its own table and notifies router A to update the routing plane index. Router C, which for case of example, only requires RIP pathway information, gets an update from the routing plane index which includes information of only the RIP failure (see column 8, lines 5-21). The routers exemplified in Martin do not take responsibility of routing traffic for another router. *Instead, where a particular router fails, the tables of all other routers communicating with that router are updated so as to reflect the failure to help pinpoint the application error occurring in router B.* As such, Martin fails to teach or suggest the specified aspects of claim 1.

Thus, the examiner has failed to make a *prima facie* case of obviousness with respect to claim 1 in view of the combination of Martin, Huitema et al. and Miller, and claim 1 is believed allowable over the combination of Martin, Huitema et al. and Miller under 35 USC § 103(a). It is requested that the rejection of claim 1 as unpatentable over the combination of Martin, Huitema et al. and Miller under 35 USC §103(a) be reversed.

Claims 2-3, 6-7 and 9. Claims 2-3, 6-7 and 9 are all directly dependent upon claim 1, and thus incorporate all of their respective limitations and are all, therefore, also believed to be allowable over Martin under 35 USC §103(a).

Thus, independent claim 1 and dependent claims 2-3, 6-7 and 9 are allowable over the combination of Martin, Huitema et al. and Miller under 35 USC §103(a), and their rejection should be reversed.

B. The rejection of dependent claim 5 under 35 USC §103(a) as being obvious over Martin, Huitema et al., Miller and further in view of Choe should be withdrawn.

Dependent claim 5, which recites selecting routes in the routing table comprising the further step of selecting contiguous IP addresses within a given address range, is directly dependent upon claim 1, and thus incorporates all of the respective limitations of claim 1 and is, therefore, also believed to be allowable over the combination of Martin, Huitema et al. and Miller under 35 USC §103(a), as well as through additional distinguishing limitations believed allowable over Choe.

Choe does not supply the missing teachings. Instead, Choe discloses a route lookup method for a routing table that uses a "skip list" in which route entries are stored according to

preset prefix lengths in each node (see paragraph [0023]). The method includes a step where a matching prefix is considered as a longest prefix when the table includes the destination address. *Choe is silent selecting contiguous IP addresses within a given address range since Choe discloses storing routing entries according to preset prefix length and not contiguousness.* Thus, claim 5 is allowable over Martin, Huitema et al., Miller and in view of Choe under 35 USC §103(a), and its rejection should be reversed.

SUMMARY

In view of the above, it is believed that each of the claims is distinguishable over the cited and applied prior art. Accordingly, the Board is respectfully requested to reverse the final rejection and to remand the application to the examiner for reconsideration consistent with the opinion of the Board.

Respectfully submitted,

Date: March 13, 2009

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Attachments

CLAIM APPENDIX

1. (Previously presented) A method for splitting and sharing routing information among several routers within a group of routers, comprising:

providing a group of routers;

each of the routers acting as a single border router in an Internet protocol network, each router comprising a routing table;

comparing the size of the routing tables with a predefined threshold; and

in response to the size of a routing table of a first of the group of routers exceeding the predefined threshold:

splitting the first router's routing table into a plurality of subnetworks;

a second of the routers taking responsibility for routing IP traffic intended for a one of the plurality of subnetworks by informing each of the other routers that it is ready to receive the IP traffic from the each of the other routers directed to the one subnetwork;

in response to the informing, each of the other routers selecting and removing from their own routing table a route related to the one subnetwork and replacing the removed route by a single route pointing to the informing second router.

2. (Previously presented) The method according to claim 1, comprising the further step of forwarding IP traffic corresponding to a non-selected route, to a router of the group of routers associated with said non-selected route within the routing table.

3. (Previously presented) The method according to claim 1, further comprising receiving from at least one of the other routers the IP traffic corresponding to the selected routes; and routing said IP received traffic.

4. (Cancelled)

5. (Original) The method according to claim 1, wherein the step of selecting routes in the routing table comprises the further step of selecting contiguous IP addresses within a given address range.

6. (Previously presented) The method according to claim 1, comprising the preliminary steps of establishing sessions with other routers of the group; and creating a list of routers of the group.

7. (Original) The method according to claim 1, comprising the preliminary step of establishing sessions with other border routers.

8. (Cancelled)

9. (Original) The method according to claim 1, wherein routers within the group exchange routing information using Border Gateway Protocol.

10-11. (Cancelled)

EVIDENCE APPENDIX

There is no evidence entered and relied upon in this appeal.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings rendered by a court or the Board in connection with this application.